Name:

## at1119paper: Complete the Square, $b$ = odd (v515)

### Example

By completing the square, find both solutions to the given equation:

$$x^2 - 55x = -414$$

Add $\left(\frac{-55}{2}\right)^2$, which equals $\frac{3025}{4}$, to both sides of the equation.

$$x^2 - 55x + \frac{3025}{4} = \frac{1369}{4}$$

Factor the left side.

$$\left(x + \frac{-55}{2}\right)^2 = \frac{1369}{4}$$

Undo the squaring.

$$x + \frac{-55}{2} = \frac{-37}{2} \quad \text{or} \quad x + \frac{-55}{2} = \frac{37}{2}$$
$$x = \frac{55 - 37}{2} \quad \text{or} \quad x = \frac{55 + 37}{2}$$
$$x = 9 \quad \text{or} \quad x = 46$$

### Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 49x = -418$$

## Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 61x \;=\; 2492$$

## Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 31x \;=\; 180$$